

CHARTER

ADAPTIVE MANAGEMENT WORK GROUP

Establishment of a Federal Advisory Committee
to Advise the Secretary of the Interior
on the Impacts of
Glen Canyon Dam Operations

1. **Official Designation:** Glen Canyon Dam Adaptive Management Work Group.
2. **Background and Purpose:** The Grand Canyon Protection Act (Act) of October 30, 1992, embodied in Public Law 102-575, directs the Secretary of the Interior (Secretary), among others to operate Glen Canyon Dam in accordance with the additional criteria and operating plans specified in section 1804 of the Act and to exercise other authorities under existing law in such a manner as to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and the Glen Canyon National Recreation Area were established, including but not limited to the natural and cultural resources and visitor use. The Secretary shall implement this section in a manner fully consistent with and subject to section 1802 of the Act. Section 1805 of the Act calls for implementation of long-term monitoring programs and activities that will ensure that Glen Canyon Dam is operated in a manner consistent with that of section 1802. As part of long-term monitoring, the Secretary's Record of Decision (ROD) mandates development and initiation of an Adaptive Management Program (AMP). The AMP provides for monitoring the results of the operating criteria and plans adopted by the Secretary and changes to those operating criteria and plans. The AMP includes an Adaptive Management Work Group (AMWG). The AMWG will facilitate the AMP, recommend suitable monitoring and research programs, and make recommendations to the Secretary as required to meet the requirements of the Act. The AMWG may recommend research and monitoring proposals outside the Act which complement the AMP process, but such proposals will be funded separately, and do not deter from the focus of the Act.
3. **Duration:** It is the intent that the AMWG shall continue indefinitely, unless otherwise terminated by the Secretary. In accordance with the Federal Advisory Committee Act (FACA), 5 U.S.C. App., this charter will terminate 2 years from the date of filing unless renewed by the Secretary prior to that time.
4. **Agency To Whom The AMWG Reports:** The AMWG reports to the Secretary through the Secretary's designee who shall serve as the chairperson of the AMWG.
5. **Administrative Support:** The logistical and support services for the meetings of the AMWG shall be provided by the Bureau of Reclamation (Reclamation).

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6. Duties: The duties or roles and functions of the AMWG are to:

- a. Establish AMWG operating procedures.
- b. Advise the Secretary in meeting environmental and cultural commitments of the EIS, as requested.
- c. Recommend the framework for the AMP policy, goals, and direction.
- d. Develop recommendations for modifying operating criteria and other resource management actions pursuant to the Act.
- e. Define and recommend resource management objectives for development and implementation of a long-term monitoring plan, and any necessary research and studies required to determine the effect of the operation of Glen Canyon Dam on the natural, recreational, and cultural resources of the Grand Canyon National Park and Glen Canyon National Recreation Area.
- f. Review and provide input to the Secretary on the reports required in Sections 1804 (c)(2) and 1804 (d).
- g. Facilitate input and coordination of information from stakeholders to the Secretary to assist in meeting consultation requirements under Sections 1804 (c)(3) and 1805 (c) of the Act.
- h. Monitor and report on compliance of all program activities with applicable laws, permitting requirements, and the Act. The duties and functions of the AMWG are in an advisory capacity only.

7. Meetings: The AMWG is expected to meet biannually. The Secretary's designee, who will serve as the designated Federal Official, may call additional meetings as deemed appropriate. Fifteen members must be present at any meeting of the AMWG to constitute a quorum.

The Secretary's designee shall be responsible for preparation of meeting agendas and scheduling meetings of the AMWG. The Secretary's designee shall attend and chair all meetings of the AMWG. In accordance with FACA, a notice of each meeting of the AMWG shall be published in the Federal Register at least 15 days prior to the meeting advising the date, time, place, and purpose of the meeting. If it becomes necessary to postpone or cancel an announced meeting, a subsequent notice shall be published in the Federal Register as early as possible and shall explain the reasons for the postponement or cancellation. A similar notice of each meeting, postponement, or cancellation shall also be published in selected major newspapers in Phoenix and Flagstaff, Arizona, Denver, Colorado, and Salt Lake City, Utah.

In accordance with FACA, all meetings of the AMWG shall be open to the general public. Any organization, association, or individual may file a written statement or, at the discretion of the AMWG, provide verbal input regarding topics on a meeting agenda in accordance with FACA.

8. **Minutes:** The minutes of each AMWG meeting; reports; related documents; and copies of all documents received, issued, or approved by the AMWG shall be available for public inspection and duplication during regular business hours within 30 working days after the meeting at the:

Upper Colorado Regional Office
Bureau of Reclamation
125 South State Street, Room 6107
Salt Lake City, Utah 84138-1102
(801) 524-6096, Extension 1

The Secretary's Designee shall approve AMWG meeting agendas and minutes.

9. **Estimated Operating Costs:** The operating costs are estimated at \$154,000 annually for the establishment and support of the AMWG. This includes costs for required staff support of about 0.3 of a person year. Expenses would also include the travel and per diem of some members and employees of the Department of the Interior while attending meetings of the AMWG, and for expenses incurred in the recording and reproduction of the minutes, reports, notices, etc.

10. **Allowances:** While engaged in the performance of approved business away from home or their regular places of business, members of the AMWG (tribal, environmental, recreation, and Contractors who purchase Federal power) shall be reimbursed for travel expenses, including per diem in lieu of subsistence.

11. **Membership:** Members of the AMWG to be appointed by the Secretary shall be comprised of:

- a. Secretary's Designee, who shall serve as chairperson for the AMWG.
- b. One representative each from the 12 cooperating agencies associated with the EIS:
 - (1) Bureau of Reclamation
 - (2) Bureau of Indian Affairs
 - (3) U.S. Fish and Wildlife Service
 - (4) National Park Service
 - (5) Western Area Power Administration
 - (6) Arizona Game and Fish Department

- (7) Hopi Tribe
- (8) Hualapai Tribe
- (9) Navajo Nation
- (10) San Juan Southern Paiute Tribe
- (11) Southern Paiute Consortium
- (12) Pueblo of Zuni

c. One representative each from the seven basin states:

- (1) Arizona
- (2) California
- (3) Colorado
- (4) Nevada
- (5) New Mexico
- (6) Wyoming
- (7) Utah

d. Two representatives each from:

- (1) Environmental groups
- (2) Recreation interests
- (3) Contractors who purchase Federal power from Glen Canyon Powerplant

Members will be appointed to the AMWG by the Secretary, with input and recommendations from the cooperating agencies, States, tribes, contractors for Federal power from Glen Canyon Dam, environmental representatives, and other stakeholders. To be eligible for appointment to the AMWG, a person must (a) be qualified through education, knowledge, or experience to give informed advice on water supply, diversion and delivery facilities, and their operation and management, or the environmental aspects of such operation; and (b) have the capability to constructively work in a group setting toward a common objective of structuring a mechanism for program implementation.

Members of the AMWG will be appointed for a 4-year term. At the discretion of the Secretary, members may be reappointed to additional terms. Vacancies occurring by reason of resignation, death, or failure to regularly attend meetings will be filled by the Secretary for the balance of the vacating member's term using the same method by which the original appointment was made. Failure to attend two consecutive meetings will substantiate grounds for dismissal.

To avoid conflict of interest issues arising from entities having representatives on the AMWG and also submitting responses to request for proposals to perform work, the Federal procurement process shall be strictly adhered to. While members of the AMWG may give

advice to the Secretarial Designee, all decisions in the procurement process shall be made by Federal procurement officials free of influence from AMWG members.



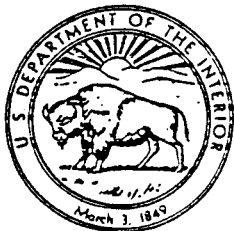
Secretary of the Interior

JAN 15 1997

Date

FEB 04 1997

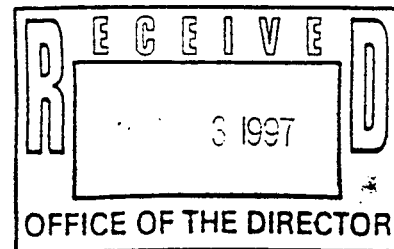
Date charter filed: _____



THE SECRETARY OF THE INTERIOR
WASHINGTON

FEB 24 1997

Honorable Fife Symington
Governor of Arizona
Phoenix, Arizona 85007



Dear Governor Symington:

The Bureau of Reclamation has established Operating Criteria and the 1997 Annual Plan of Operations (APO) for Glen Canyon Dam as required by the Grand Canyon Protection Act. Copies of these documents are enclosed. This action was taken after distributing draft copies of the proposed Operating Criteria and the proposed 1997 Plan of Operations to representatives of the Governors of the Colorado River Basin States, the Upper Colorado River Commission, appropriate Federal agencies, tribal, academic, scientific and recreation representatives, and others interested in Colorado River operations, and after holding a consultation meeting on November 21, 1996, with these same entities. The Operating Criteria and APO reflect the implementation of the Record of Decision (ROD) for the Glen Canyon Dam Environmental Impact Statement and meet the requirements of the 1992 Grand Canyon Protection Act.

The Operating Criteria specify the requirements for an annual report of operations under the Grand Canyon Protection Act, a periodic review of the Operating Criteria, and details regarding operational constraints. These constraints include maximum, minimum, and daily fluctuation flow rates, maximum ramp rates, emergency exception criteria, flood frequency reduction measures, habitat maintenance flows, and beach/habitat building flows.

The recommended 1997 Plan of Operations reflects the operation of Glen Canyon Dam consistent with the Operating Criteria. Monthly releases are expected to vary between 600,000 acre-feet and 1,500,000 acre-feet with daily flow fluctuations likely between 6,000 cfs/day and 8,000 cfs/day depending on monthly release volumes. The maximum daily flow rate of 25,000 cfs and the maximum upramp rate of 4,000 cfs/hr during fluctuating flow conditions, as described in the Final Environmental Impact Statement and ROD, will be placed into effect.

During the preparation of the 1996 Annual Operating Plan prepared under the 1968 Colorado River Basin Project Act, operating guidelines were agreed to which attempt to accomplish the intent of the Beach/Habitat Building Flow of the Glen Canyon Dam Environmental Impact Statement developed in cooperation with the Basin States. With this commitment from all parties, a test of this "spike flow" was conducted in March/April 1996. It is my intention that Glen Canyon Dam will continue to be operated in conformance with the agreement in the 1996 Annual Operating Plan regarding Beach/Habitat Building Flows.

Every measure will be taken to prevent a powerplant bypass during 1997 in order to preserve the environmental enhancement accomplished by the 1996 beach/habitat building flow. Should releases

Honorable Fife Symington

2

in excess of powerplant capacity occur, they will be managed consistent with all of the Secretary's authorities to benefit to the greatest degree possible, the downstream environment of the Grand Canyon. On January 1, 1997, Lake Powell contents exceeded 19 million acre-feet; therefore, a habitat maintenance flow will not be scheduled this year.

Sincerely,

A handwritten signature in dark ink, appearing to read "Bill Clinton", is written over the "Sincerely," text.

Enclosures

cc: ✓ Ms. Rita Pearson
Director, Arizona Department of
Water Resources

Operating Criteria for Glen Canyon Dam
In accordance with the
Grand Canyon Protection Act of 1992

These Operating Criteria are promulgated in compliance with section 1804 of Public Law 102-575, the Grand Canyon Protection Act of 1992. They are to control the operation of Glen Canyon Dam, constructed under the authority of the Colorado River Storage Project Act. These Operating Criteria are separate and apart from the Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs prepared in compliance with the Colorado River Basin Project Act of 1968.

1. Annual Report

As required in the Grand Canyon Protection Act, a report shall be prepared and submitted to Congress annually that describes the operation of Glen Canyon Dam for the preceding water year and the expected operation for the upcoming water year. The annual plan of operations shall include such detailed rules and quantities as are required by the Operating Criteria contained herein. It shall provide a detailed explanation of the expected hydrologic conditions for the Colorado River immediately below Glen Canyon Dam.

2. Review of Criteria

The Secretary of the Interior shall review these Operating Criteria as the result of actual operating experiences to determine if the Operating Criteria should be modified to better accomplish the purposes of the Grand Canyon Protection Act. Such a review shall be made at least every 5 years in consultation with the appropriate Federal agencies, Governors of the Colorado River Basin States, Indian Tribes, representatives of academic and scientific communities, environmental organizations, the recreation industry, and contractors for the purchase of Federal power produced at Glen Canyon Dam.

3. Specific Operational Constraints

The plan of operations will follow the description of the preferred alternative (Modified Low Fluctuating Flow) in the Operation of Glen Canyon Dam Final Environmental Impact Statement and its Record of Decision. The specific criteria are as follows:

Minimum Releases-- 8,000 cfs between 7 a.m. and 7 p.m. 5,000 cfs at night

Maximum Releases-- 25,000 cfs. Several circumstances warrant exception to this restriction. These are the Beach/Habitat Building Flows and the Habitat Maintenance Flows (both described below) and the release of large volumes of water to avoid spills or floodflow releases from Glen Canyon Dam. These latter releases would most likely result from high snowmelt runoff into Lake Powell; if such high releases above 25,000 cfs are required, they shall be made at constant daily flow rates.

Allowable Daily Flow Fluctuations-- 5,000 cfs/24 hours for monthly release volumes less than 600,000 acre feet; 6,000 cfs/24 hours for monthly release volumes of 600,000 to 800,000 acre feet; and 8,000 cfs/24 hours for monthly release volumes over 800,000 acre feet.

Maximum Ramp Rates-- 4,000 cfs/hour when increasing, and 1,500 cfs/hour when decreasing.

Emergency Exception Criteria--Normal powerplant operations will be altered temporarily to respond to emergencies. These changes in operations typically would be of short duration (usually less than 4 hours) and would be the result of emergencies at the dam or within the interconnected electrical system. Examples of system emergencies include:

- Insufficient generating capacity
- Transmission system: overload, voltage control, and frequency
- System restoration
- Humanitarian situations (search and rescue)

Flood Frequency Reduction Measures-- The frequency of unanticipated flood flows in excess of 45,000 cfs will be reduced to no more than 1 year in 100 years as a long-term average. This will be accomplished initially through the Annual Operating Plan process and eventually by raising the height of the spillway gates at Glen Canyon Dam 4.5 feet.

Habitat Maintenance Flows-- Habitat maintenance flows are high, steady releases within powerplant capacity (33,200 cfs) not to exceed 14 days in March, although other months will be considered under the Adaptive Management Program. Actual powerplant release capacity may be less 33,200 cfs under low reservoir conditions. These flows will not be scheduled when projected storage in Lake Powell on January 1 is greater than 19,000,000 acre feet, and typically would occur when annual releases are at or near the minimum objective release of 8,230,000 acre-feet. Habitat maintenance flows differ from beach/habitat-building flows because they will be within powerplant capacity, and will occur nearly every year when the reservoir is low.

Beach/Habitat-Building Flows-- These controlled floods will occur as described in the EIS (steady flow not to exceed 45,000 cfs, duration not to exceed 14 days, up-ramp rates not to exceed 4,000 cfs/hour, and down-ramp rates not to exceed 1,500 cfs/hour) except instead of conducting them in years in which Lake Powell storage is low on January 1, they will be accomplished by utilizing reservoir releases in excess of powerplant capacity required for dam safety purposes. Such releases are consistent with the 1956 Colorado River Storage Project Act, the 1968 Colorado River Basin Project Act, and the 1992 Grand Canyon Protection Act.



Secretary of the Interior

FEB 24 1997

Date

Glen Canyon Dam 1997 Annual Plan of Operations
prepared in accordance with the Operating Criteria
developed for the Grand Canyon Protection Act (GCPA)

Under most probable inflow conditions in water year 1997, Glen Canyon Dam is expected to release about 10.2 MAF through the Grand Canyon to Lake Mead. This is about 2 MAF greater than the minimum objective release and is the result of storage equalization with Lake Mead as required under the 1968 Colorado River Basin Project Act. Lake Powell is expected to peak at elevation 3686 feet, 14 feet from full.

Monthly release volumes from Glen Canyon Dam during 1997 are expected to range from 600,000 AF to 1,200,000 AF as discussed in the 1997 Annual Operating Plan prepared under the 1968 Colorado River Basin Project Act. Projected daily allowable fluctuations therefore will be 6,000 cfs or 8,000 cfs (see criteria). With the projected monthly release volumes, it is likely that peak daily releases will exceed 20,000 cfs only during the months of July and August, when monthly release volumes are at their highest for the year. Minimum releases of 5,000 cfs at night and 8,000 cfs during the day and ramping rates of 4,000 cfs/hr increasing and 1,500 cfs/hr decreasing will be followed. All of the above is outlined in the Record of Decision implementing the preferred alternative of the Glen Canyon Dam Environmental Impact Statement.

Since the hydrologic condition of the Colorado River basin and the projected operation of Lake Powell are not expected to create a dam safety condition this year (i.e. no flood releases), a beach/habitat building flow is not planned in 1997. In addition, every measure will be taken to prevent a powerplant bypass this spring in order to preserve the environmental enhancement accomplished by the beach/habitat building flow test in April 1996. Water year 1997 will have a January 1, 1997, Lake Powell storage content of greater than 19 MAF, therefore a beach/habitat maintenance flow of powerplant capacity is also not planned.

This plan is prepared in conformance with Section 1804(c)(1)(A) of the GCPA. Any changes to the plan would require reconsultation in accordance with this Act. Because this is the initial year for this plan of operations, it will be implemented on December 1, 1996, and run through September 30, 1997.

DRAFT (11/3/97)

Glen Canyon Dam 1998 Annual Plan of Operations prepared in accordance with the Operating Criteria developed for the Grand Canyon Protection Act (GCPA)

Under the most probable inflow conditions in water year 1998, Glen Canyon Dam is expected to release about 11.8 MAF through the Grand Canyon to Lake Mead. This is about 3.6 MAF greater than the minimum objective release and is the result of high reservoir storage in both Lakes Powell and Mead. Lake Powell is expected to fill in July.

Monthly release volumes from Glen Canyon Dam during 1998 are expected to range from 600,000 AF to 1,200,000 AF. Projected daily allowable fluctuations therefore will be between 6,000 cfs and 8,000 cfs (see criteria). Minimum releases of 5,000 cfs at night and 8,000 cfs during the day and ramping rates of 4,000 cfs/hr increasing and 1,500 cfs/hr decreasing will be followed. All of the above is outlined in the Record of Decision implementing the preferred alternative of the Glen Canyon Dam Environmental Impact Statement.

With current projected monthly release volumes, daily releases likely will exceed 20,000 cfs from October through the month of January and again during the summer peak months of July and August, when monthly release volumes are at their highest for the year. If releases above 25,000 cfs are made, they will be made as steady flows. With the strong current El Nino Southern Oscillation anomaly, there is some indication that winter precipitation could be higher than normal in the southern portion of the Upper Colorado River Basin and that spring precipitation could also be higher than normal in the northern portion of the Basin. Since there are concerns for resulting high releases from Glen Canyon Dam, Lake Powell is being drawn down about 0.5 MAF more than usual by January 1, 1998, and releases throughout the year will be made in such a way to reduce the risk of uncontrolled spring releases that could result from large forecast errors similar to 1983.

Every measure will be taken to prevent such an uncontrolled powerplant bypass this spring in order to protect the Grand Canyon ecosystem downstream of Lake Powell. Discussions are continuing regarding the hydrologic triggering mechanisms under which Beach/Habitat Building Flows could be released from Glen Canyon Dam. Since water year 1998 is expected to have a January 1, 1998, Lake Powell storage content greater than 19 MAF, a beach/habitat maintenance flow of powerplant capacity is not planned.

This plan is prepared in conformance with Section 1804(c)(1)(A) of the GCPA. Any changes to the plan would require reconsultation in accordance with this Act.

Interagency Agreement No. 97-SLC-0333
AUTHENTICATED COPY

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
UPPER COLORADO REGION

AND

UNITED STATES
DEPARTMENT OF ENERGY
WESTERN AREA POWER ADMINISTRATION
CRSP CUSTOMER SERVICE CENTER

OPERATING AGREEMENT ASSOCIATED WITH
GLEN CANYON DAM OPERATING CRITERIA

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
UPPER COLORADO REGION

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UNITED STATES
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WESTERN AREA POWER ADMINISTRATION
CRSP CUSTOMER SERVICE CENTER

OPERATING AGREEMENT ASSOCIATED WITH
GLEN CANYON DAM OPERATING CRITERIA

1. PREAMBLE

This Interagency Agreement (Agreement) is made this 7th day of July 1997, pursuant to the Acts of Congress approved June 17, 1902 (32 Stat. 388); April 11, 1956 (70 Stat. 105); August 4, 1977 (91 Stat. 565); the Transfer of Functions and Property Agreement, dated March 26, 1980; and the Acts amendatory or supplementary to the foregoing Acts; between the UNITED STATES DEPARTMENT OF ENERGY, Western Area Power Administration, hereinafter called "Western," represented by the officer executing this Agreement or a duly appointed successor, and THE UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, hereinafter called "Reclamation," represented by the officer executing this Agreement or a duly appointed successor; each sometimes hereinafter individually called Party, or both sometimes hereinafter collectively called the Parties.

2. EXPLANATORY RECITALS

2.1 Reclamation is a Federal agency with management responsibilities for dam and power operations at Glen Canyon Dam.

- 1 2.2 Western is a Federal agency responsible for the marketing and delivery of power
2 and energy from Glen Canyon Dam.
- 3
- 4 2.3 Reclamation and Western have entered into the aforementioned Transfer of
5 Functions and Property Agreement which, among other things, delineates each
6 Party's responsibilities for power system operations including provision of
7 operating reserves, development of schedules, optimizing reserve generation, and
8 cooperation in controlling system voltage.
- 9
- 10 2.4 Western has entered into firm electric service contracts with various entities
11 committing the sale of Colorado River Storage Project (CRSP) firm power and
12 energy surplus to Reclamation project power loads.
- 13
- 14 2.5 On October 21, 1991, Western and Reclamation entered into Interagency
15 Agreement No. 91-SLC-0180 which outlined the Exception Criteria and
16 associated operational procedures during the preparation of the Operation of Glen
17 Canyon Dam Final Environmental Impact Statement, the Glen Canyon Dam
18 research flows and subsequent interim operations.
- 19
- 20 2.6 On February 24, 1997, the Secretary of the Interior signed the Operating Criteria
21 for Glen Canyon Dam, in accordance with the Grand Canyon Protection Act,
22 hereinafter called "Operating Criteria," attached as Exhibit B.
- 23
- 24 2.7 This Agreement is written to implement the Operating Criteria and to assure
25 adequate, reliable, and secure services from Glen Canyon Dam.
- 26
- 27
- 28

3. AGREEMENT

The Parties agree to the terms and conditions set forth herein.

4. TERM OF AGREEMENT

4.1 This Agreement shall become effective on the date of execution and shall remain in effect unless and until canceled by either party by written notice given not less than one year in advance of the intended termination date.

4.2 The Parties shall periodically review, not less often than every 12 months, operations under this Agreement, and the Parties hereto shall put into effect necessary modifications, which shall be evidenced by written amendment to this Agreement.

5. DEFINITIONS

5.1 Available Generating Capacity means net operable capacity (i.e., total installed nameplate capacity at rated power factor less inoperable capacity).

5.2 Average Integrated Value Across the Hour with respect to generation and water releases, means the sum of the instantaneous values taken across the hour divided by the number of instantaneous values taken.

5.3 Emergency Exception Criteria means that part of the Operating Criteria designed to cover events which will result in the temporary alteration of normal powerplant operations. Examples of these conditions are illustrated in the Operating Criteria and further in Exhibit D, attached, which are guidelines based on North American

Electric Reliability Council Criteria. These guidelines are illustrative of reliability criteria that are developed and modified from time to time.

5.4 Environmental Impact Statement (EIS) means the Final Environmental Impact Statement on the operations of Glen Canyon Dam filed with the Environmental Protection Agency March 21, 1995, and the subsequent Record of Decision signed October 9, 1996.

5.5 North American Electric Reliability Council (NERC) means the organization formed in 1968 to promote the reliability of bulk electric supply by the electric systems of North America; to conduct interregional studies which relate to the reliability of the bulk electric systems and to make information appropriately available; to encourage and assist the development of interregional reliability arrangements among Regional Electric Reliability Councils and their members; to exchange information with respect to planning and operating matters relating to the reliability of bulk electric supply; to review periodically regional and interregional activities on reliability; and to enforce reliability standards. Western is required to report monthly to NERC as to system control performance.

5.6 Regulation Control means the use of automatic generation control to adjust the power output of electric generators within a prescribed area in response to changes in the system frequency, time error, and tie-line loading, so as to maintain the Scheduled Level of generation in accordance with prescribed NERC criteria. This can result in instantaneous changes in the Glen Canyon Dam generation in support of system frequency and time error control.

Regulation Control is used at Glen Canyon Dam as a real-time-computer-driven change to the hourly schedule. These changes which occur many times during the hour are both positive and negative in relation to the schedule. The resulting output from Glen Canyon generators is an envelope of generation swings that are frequent, small in magnitude, the average of which approximates the original schedule.

5.7 Scheduled Level means the amount of generation established for hourly programming of the Glen Canyon Dam.

5.8 System Emergency means any condition caused by or affecting transmission or generation which requires immediate action to prevent loss of firm load, equipment damage, or tripping of system elements. Examples of System Emergencies include, but are not limited to; the loss of either a significant generation resource or a significant transmission resource that leads to an imbalance in the delivery, frequency, or voltages of power supply.

5.9 Unloaded Capacity means operable capacity at Glen Canyon which is available but not presently serving load.

5.10 Western Systems Coordinating Council (WSCC) means the regional electric reliability council of NERC that covers most of 11 western states, two Canadian provinces, and a small portion of Mexico.

1 6. POWER SYSTEM OPERATIONS

2 6.1 Pursuant to Reclamation's water schedules and maintenance activities, Western's
3 firm electric service contractual commitments, and consistent with the guidelines
4 and criteria of the NERC and WSCC, Available Generating Capacity must be
5 sufficient to meet system regulation needs, maintain transmission reliability,
6 maintain power operating reserve requirements, and to serve firm load
7 requirements.

8
9 6.2 In consideration of the power operating guidelines and criteria described in
10 Section 6.1 of this Agreement, and in accordance with the provisions of this
11 Agreement, Reclamation will make Unloaded Capacity available from the Glen
12 Canyon Dam Powerplant to the power system under emergency situations so that
13 Western can continue to operate within utility industry standards.

14
15 6.3 Reclamation or Western shall, in all instances when the requirements to invoke
16 Emergency Exception Criteria are known sufficiently in advance, notify the other
17 party and the parties will collectively determine the appropriate action.
18

19 7. EMERGENCY SITUATIONS

20 7.1 The Available Generating Capacity at Glen Canyon Dam shall respond to CRSP
21 System Emergencies as well as to applicable interconnected System Emergencies
22 pursuant to the NERC and WSCC guidelines and criteria.
23

24 7.2 If a power resource becomes unavailable to Western, or if additional generation is
25 needed, Available Generating Capacity at Glen Canyon Dam will be available to
26 support firm load until another source of energy can be found. The generation at
27
28

1 Glen Canyon Dam will be increased only if other available CRSP generation has
2 been utilized. Under an unavailable resource scenario, Western will call for
3 replacement resources from other interconnected utilities and/or generation from
4 other Western offices in accordance with standard utility practice.
5

6 7.3 Western and Reclamation will continue to respond to requests for changes in
7 releases for humanitarian reasons (i.e., rescue and recovery activities).
8

9 7.4 Should conditions arise, including, but not limited to those described in
10 Sections 7.1, 7.2, or 7.3 of this Agreement, or the Emergency Exception Criteria,
11 which require changes to Glen Canyon Dam generation outside of the Minimum
12 and Maximum Releases and Allowable Daily Fluctuations defined in the Specific
13 Operational Constraints of the Operating Criteria for periods greater than 1 hour,
14 generation will be restored at Glen Canyon Dam in accordance with the provisions
15 of Exhibit A, attached hereto, of this Agreement.
16

17 7.5 If, as a result of an emergency situation, generation at Glen Canyon is lost,
18 generation will be restored as soon as possible. (Many times this can be
19 accomplished within 15 minutes, and only under extraordinary conditions would
20 this require more than 1 hour). Releases without generation will be made through
21 by-pass valves to restore the minimum-release level only after it has been
22 determined that generation cannot be restored within a 1-hour timeframe.
23

24 7.6 If it is anticipated that Glen Canyon Dam generation will be needed to operate
25 under Emergency Exception Criteria for more than 1 hour, Western dispatchers
26
27
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and Reclamation's operators will consult with each other and with others as appropriate.

8. REGULATION

8.1 The Parties agree and recognize that Regulation Control is an essential part of operations and is required under all circumstances. Adequate generation for regulation purposes will be provided at Glen Canyon Dam and also may be provided at other CRSP facilities pursuant to power system operation practices, and generation will be measured as an Average Integrated Value Across the Hour.

8.2 Western will determine which CRSP plants will be placed on Regulation Control by Reclamation, taking into consideration sufficient water and associated generation that must be made available to maintain control area needs on an hourly basis. Western and Reclamation will consult as needed on water and plant availability.

8.3 For purposes of monitoring compliance with this Agreement, the Page Supervisory Control and Data Acquisition System will be the measure of all release flows from Glen Canyon Dam.

9. PERFORMANCE AND COORDINATION

9.1 Western will make every effort to adhere to the Minimum and Maximum Releases and Allowable Daily Fluctuations defined in the Specific Operational Constraints of the Operating Criteria under normal system-operating conditions.

- 1 9.2 On occasions when the need to operate under Emergency Exception Criteria can
2 be anticipated by Western, every effort will be made to avoid such operations
3 during periods of special resource sensitivity. A listing of sensitive resources and
4 periods of vulnerability are described in Exhibit C to this Agreement.
5
- 6 9.3 Reclamation and Western agree that Basin Fund revenues will be used to fund a
7 long-term monitoring program and associated research program regarding dam
8 operations, as provided by law.
9
- 10 9.4 At least annually, the CRSP Manager of Western and the Upper Colorado
11 Regional Director of Reclamation will meet to discuss the Operating Criteria and
12 the effects of the Operating Criteria on Western's and Reclamation's operations
13 and maintenance budgets. Analysis of future net expenses and available cash
14 resources may indicate the potential for violation of the Anti-Deficiency Act.
15 When this potential exists, appropriate measures must be considered and taken so
16 that the Basin Fund is not deficient.
17
- 18 9.5 Western and Reclamation operations personnel will coordinate and as necessary
19 meet to identify any use of Emergency Exception Criteria and the impact and
20 effects of specific occurrence(s).
21
- 22 9.6 Operational communications between Western and Reclamation will continue
23 through daily morning reports submitted by Western. These morning reports list
24 any system disturbances that may have affected CRSP operations during the
25 preceding 24 hours. Reclamation will be notified when use of Emergency
26 Exception Criteria occurs so that evaluation of the effects can be noted.
27
28

10. SAFETY

Human safety will not be compromised in order to preserve Operating Criteria.

11. EXHIBITS

Inasmuch as certain provisions of this Agreement may change during the term hereof, they may be set forth in exhibits from time-to-time agreed upon by the Parties in writing. The initial Exhibits A, B, C, and D and all future exhibits shall be attached hereto and made a part hereof, and each shall be in full force and effect in accordance with its terms unless superseded by a subsequent Exhibit.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be duly executed by day and year first above written.

BUREAU OF RECLAMATION

By: Rick L. Gold

Title: _____

Date: _____

WESTERN AREA POWER ADMINISTRATION

By: [Signature]

CRSP Manager
Colorado River Storage Project
Customer Service Center
Western Area Power Administration
Salt Lake City, Utah 84147-0606

Approved

[Signature]
Reg. Solicitor's Office

EXHIBIT A

PROCEDURES TO RESUME OPERATIONS FOLLOWING AN EMERGENCY EXCEPTION CRITERIA EVENT

1. This Exhibit A is made this 7th day of July, 1997, to be effective under and as part of Interagency Agreement No. 97-SLC-0333, dated July 7, 1997, hereinafter called the "Agreement," shall remain in effect until superseded by another Exhibit A in accordance with the provisions of the Agreement; Provided, That this Exhibit A or any superseding Exhibit A shall be terminated by the expiration of the Agreement.
2. When an event causing releases to be less than minimum flows for periods exceeding 1 hour's duration occurs, Then:

First: If generation cannot follow upramp rate, use by-pass valves to achieve or maintain a 5,000 (or 8,000 depending on time of day) cfs minimum flow (release below a 5,000 cfs minimum for humanitarian emergencies may be an exception).

Second: Return to the current Scheduled Level as quickly as possible if the Scheduled Level can be attained in less than 4 hours. If return to the current Scheduled Level is initiated after 4 hours, ramp up at no greater than 4,000 cfs per hour or at an appropriate rate for resource benefits as agreed upon between Western and Reclamation operations personnel.
3. When an event causing releases to exceed maximum flows for periods exceeding 1 hour's duration occurs:
 - a. Return to the current Scheduled Level as quickly as possible if the Scheduled Level can be attained in less than 2 hours. If return to the current Scheduled Level is initiated after 2 hours, ramp down at no greater than 1,500 cfs per hour or an appropriate rate for resource benefits as agreed upon between Western and Reclamation operations personnel.
 - b. If generation cannot follow downramp rate, the by-pass valves may be used to meet downramp requirements.

EXHIBIT B

Operating Criteria for Glen Canyon Dam
In accordance with the
Grand Canyon Protection Act of 1992

These Operating Criteria are promulgated in compliance with section 1804 of Public Law 102-575, the Grand Canyon Protection Act of 1992. They are to control the operation of Glen Canyon Dam, constructed under the authority of the Colorado River Storage Project Act. These Operating Criteria are separate and apart from the Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs prepared in compliance with the Colorado River Basin Project Act of 1968.

1. Annual Report

As required in the Grand Canyon Protection Act, a report shall be prepared and submitted to Congress annually that describes the operation of Glen Canyon Dam for the preceding water year and the expected operation for the upcoming water year. The annual plan of operations shall include such detailed rules and quantities as are required by the Operating Criteria contained herein. It shall provide a detailed explanation of the expected hydrologic conditions for the Colorado River immediately below Glen Canyon Dam.

2. Review of Criteria

The Secretary of the Interior shall review these Operating Criteria as the result of actual operating experiences to determine if the Operating Criteria should be modified to better accomplish the purposes of the Grand Canyon Protection Act. Such a review shall be made at least every 5 years in consultation with the appropriate Federal agencies, Governors of the Colorado River Basin States, Indian Tribes, representatives of academic and scientific communities, environmental organizations, the recreation industry, and contractors for the purchase of Federal power produced at Glen Canyon Dam.

3. Specific Operational Constraints

The plan of operations will follow the description of the preferred alternative (Modified Low Fluctuating Flow) in the Operation of Glen Canyon Dam Final Environmental Impact Statement and its Record of Decision. The specific criteria are as follows:

Minimum Releases— 8,000 cfs between 7 a.m. and 7 p.m. 5,000 cfs at night

Maximum Releases— 25,000 cfs. Several circumstances warrant exception to this restriction. These are the Beach/Habitat Building Flows and the Habitat Maintenance Flows (both described below) and the release of large volumes of water to avoid spills or floodflow releases from Glen Canyon Dam. These latter releases would most likely result from high snowmelt runoff into Lake Powell; if such high releases above 25,000 cfs are required, they shall be made at constant daily flow rates.

Allowable Daily Flow Fluctuations-- 5,000 cfs/24 hours for monthly release volumes less than 600,000 acre feet; 6,000 cfs/24 hours for monthly release volumes of 600,000 to 800,000 acre feet; and 8,000 cfs/24 hours for monthly release volumes over 800,000 acre feet.

Maximum Ramp Rates-- 4,000 cfs/hour when increasing, and 1,500 cfs/hour when decreasing.

Emergency Exception Criteria--Normal powerplant operations will be altered temporarily to respond to emergencies. These changes in operations typically would be of short duration (usually less than 4 hours) and would be the result of emergencies at the dam or within the interconnected electrical system. Examples of system emergencies include:

- Insufficient generating capacity
- Transmission system: overload, voltage control, and frequency
- System restoration
- Humanitarian situations (search and rescue)

Flood Frequency Reduction Measures-- The frequency of unanticipated flood flows in excess of 45,000 cfs will be reduced to no more than 1 year in 100 years as a long-term average. This will be accomplished initially through the Annual Operating Plan process and eventually by raising the height of the spillway gates at Glen Canyon Dam 4.5 feet.

Habitat Maintenance Flows-- Habitat maintenance flows are high, steady releases within powerplant capacity (33,200 cfs) not to exceed 14 days in March, although other months will be considered under the Adaptive Management Program. Actual powerplant release capacity may be less 33,200 cfs under low reservoir conditions. These flows will not be scheduled when projected storage in Lake Powell on January 1 is greater than 19,000,000 acre feet, and typically would occur when annual releases are at or near the minimum objective release of 8,230,000 acre-feet. Habitat maintenance flows differ from beach/habitat-building flows because they will be within powerplant capacity, and will occur nearly every year when the reservoir is low.

Beach/Habitat-Building Flows-- These controlled floods will occur as described in the EIS (steady flow not to exceed 45,000 cfs, duration not to exceed 14 days, up-ramp rates not to exceed 4,000 cfs/hour, and down-ramp rates not to exceed 1,500 cfs/hour) except instead of conducting them in years in which Lake Powell storage is low on January 1, they will be accomplished by utilizing reservoir releases in excess of powerplant capacity required for dam safety purposes. Such releases are consistent with the 1956 Colorado River Storage Project Act, the 1968 Colorado River Basin Project Act, and the 1992 Grand Canyon Protection Act.



Secretary of the Interior

FEB 24 1997

Date

EXHIBIT C

CRITICAL ECOSYSTEM ELEMENTS
GLEN AND GRAND CANYON

1. This Exhibit C is made this 7th day of July, 1997, to be effective under and as part of Interagency Agreement No. 97-SLC-0333, dated July 7, 1997, hereinafter called the "Agreement," shall remain in effect until superseded by another Exhibit C in accordance with the provisions of the Agreement; Provided, That this Exhibit C or any superseding Exhibit C shall be terminated by the expiration of the Agreement.
2. The Operating Criteria have been designed to reduce the impact of Glen Canyon Dam operations on the natural resources in the Glen Canyon National Recreation Area and Grand Canyon National Park. Operations under Emergency Exception Criteria may affect the resources of concern. The level of impact will vary depending upon the magnitude, duration, timing, and frequency of flows.
3. The information presented below is to be used by the operators of both Western and Reclamation in their decision process.
4. Listed below are the critical periods of time for selected natural resources in the Glen and Grand Canyons.

Deviations Lower Than the Minimum (5,000 cfs)

<u>Resource</u>	<u>Impact</u>	<u>Critical Period</u>
Trout	Stranding adults	December - March
	Stranding eggs	December - March
Cladaphora	Freezing	December - February
	Desiccation	June - August
Native Fish	Larval stranding	May - August
Vegetation	Desiccation	May - September

Deviations Higher Than the Maximum (25,000 cfs)

<u>Resource</u>	<u>Impact</u>	<u>Critical Period</u>
Vegetation	Flooding	May - June
Insects	Flooding	May - September
Waterfowl	Flooding Nests	May - June
Passerine Birds	Flooding Nests	May - June
Native Fish	Washed out of backwaters	March - October
Reptiles	Flooding	May - September

5. The resources and impacts listed above represent both critical resources and indicators for the ecosystem. The Procedure to Resume Operations Following an Emergency Exception Criteria Event (Exhibit A) should be used in general to return to the Scheduled Level.
6. As additional data from research and long-term monitoring are collected and analyzed, modification of the above stated resources will be made as appropriate.

EXHIBIT D

Emergency Operating Policies

Inflow Forecasting

National Weather Service inflow projections, received twice a month, are used to project a 3- to 4-month period. This data comes from a satellite telemetered network of more than 100 Upper Colorado River Basin data collection points. These points gather snow water content, precipitation, temperature, and streamflow information. The water year begins in October, with later adjustments made for anticipated targets such as annual volumes and flood control elevations. Starting on January 1, forecasts are made for the April through July inflow, the peak runoff period. These early forecasts may contain large errors due to climatic variability as well as modeling and data uncertainties. Uncertainty decreases as the snow accumulation period progresses into the runoff season. As the runoff season progresses, monthly scheduled releases are modified to accommodate projected runoff changes.

Operational Emergencies

The North American Electrical Reliability Council (NERC) has established guidelines for emergency operations of interconnected systems. These guidelines apply to Glen Canyon Dam operations and may account for operational changes outside of those identified in descriptions of the alternatives. These changes in operations are intended to be of short duration as a result of emergencies at the dam or within the transmission network. NERC provides operating policies for system emergencies, and only examples are given here.

Insufficient Generation Capacity. When a control area has an operating capacity emergency, it must promptly balance its generation and interchange schedules to its load, without regard to financial cost, to avoid prolonged use of the assistance provided by interconnection frequency bias. The emergency reserve inherent in frequency deviation is intended to be used only as a temporary source of emergency energy and must be promptly restored so the interconnected systems can withstand the next contingency. A control area unable to balance its generation and interchange schedules to its load must remove sufficient load to permit correction of its Area Control Error.

If a control area anticipates an operating capacity emergency, it must bring on all available generation, postpone equipment maintenance, schedule interchange purchases well in advance, and prepare to reduce load.

An example of insufficient generation capacity and the appropriate response would be as follows: if any coal-fired powerplant in Western's load control area were unexpectedly lost, the response would be an increase in Colorado River Storage Project (CRSP) generation or imports to cover the change in anticipated generation within the control area.

Transmission (Overload, Voltage Control). If a transmission facility becomes overloaded or if voltage levels are outside of established limits and the condition cannot be relieved by normal means (such as adjusting generation or interconnection schedules) and a credible contingency under these conditions would adversely impact the interconnection, appropriate relief measures, including load shedding, shall be implemented promptly to return the transmission facility to within established limits. This action shall be taken by the system, control area, or pool causing

the problem if it can be identified; or by other systems or control areas, as appropriate, if identification cannot be readily determined.

An example of a response to all overloaded transmission system would be automatic relay tripping and taking a transmission line, such as the Glen Canyon-Flagstaff 345-kV line, out of service. This action would cause Glen Canyon powerplant generation to be reduced instantaneously to a predetermined level based on the capacity of the line taken out of service.

Load Shedding. After taking all other steps, a system or control area whose integrity is in jeopardy due to insufficient generation or transmission capacity shall shed customer load rather than risk an uncontrolled failure of interconnection components.

An example requiring the extreme step of load shedding could occur if there were an interruption of the transmission capacity between the heavy load areas of Southern California and Arizona and the heavy generation areas of the Pacific Northwest, Colorado, Wyoming, and Montana. In this situation, Glen Canyon would be isolated with the heavy load areas. The response would be for Glen Canyon to swing from existing generation levels to maximum powerplant capacity. Then the automatic relay protection would open the transmission lines to the heavy load area, reducing the generation at Glen Canyon.

System Restoration. After a system collapse, restoration shall begin when it can proceed in an orderly and secure manner. Systems and control areas shall coordinate their restoration actions. Restoration priority shall be given to the station supply of powerplants and the transmission system. Even though the restoration should be expeditious, system operators should avoid premature action to prevent a recollapse of the system.

Customer load shall be restored as generation and transmission equipment becomes available, while keeping load and generation in balance at normal frequency as the system is restored.

Emergency Information Exchange. A system control area or pool experiencing or anticipating an operating emergency should communicate its current and future status to neighboring systems, control areas, or pools and throughout the interconnection. Systems able to provide emergency assistance must make known their capabilities.

Special System or Control Area. Because the facilities of each system may be vital to the interconnection's secure operation, systems and control areas shall make every effort to remain connected. However, if a system or control area determines that it is endangered by remaining interconnected, it may take action as necessary to protect its system.

If a portion of the interconnection becomes separated from the remainder of the interconnection, abnormal frequency and voltage deviations may occur. To permit resynchronizing, relief measures should be applied by those separated systems contributing to the frequency and voltage deviations.

An example of when Western might choose to disconnect the Glen Canyon Powerplant from the interconnected system would be in the case of a search and rescue operation in the canyon when there would be a need to control the releases.

Although the situations are infrequent, they do occur and require immediate, short-term changes in dam operation. In general, changes resulting from emergencies at Glen Canyon would result in

decreases in flows. Emergencies in the system away from the dam would result in increases in flows.

Humanitarian Situations

There are occasions when managing agencies and local authorities, such as the police, request that the flows from the dam be reduced so that search and rescue procedures can be conducted or fatalities can be recovered from the river. In these situations, flows will be reduced for an agreed upon period of time. When returning to normal operations, flows will be brought up quickly to the minimum flow identified in the alternative and then may be increased at the ramping rate identified in the alternative.

DRAFT 10/14/97

GLEN CANYON DAM ADAPTIVE MANAGEMENT WORK GROUP OPERATING PROCEDURES

FOREWORD

The Grand Canyon Protection Act (Act) of October 30, 1992, (Public Law 102-575) directs the Secretary of the Interior (Secretary) to "establish and implement long-term monitoring programs and activities that will ensure that Glen Canyon Dam is operated in a manner consistent with that of section 1802" of the Act. "The monitoring programs and activities shall be established and implemented in consultation with the Secretary of Energy; the Governors of the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming; Indian tribes; and the general public, including representatives of academic and scientific communities, environmental organizations, the recreation industry, and contractors for the purchase of Federal power produced at Glen Canyon Dam." In order to comply with the consultation requirement of the Act, the Glen Canyon Dam EIS recommended formation of a Federal Advisory Committee. To fulfill this requirement the Glen Canyon Adaptive Management Work Group (AMWG) has been established. The AMWG Charter imposes the following criteria: (1) the AMWG shall operate under the Federal Advisory Committee Act (Public Law 92-463); (2) the Chairperson shall be the designated by the Secretary; (3) the Secretary's Designee, shall also serve as the Designated Federal Official under the Federal Advisory Committee Act; (4) the Bureau of Reclamation will provide the necessary support in taking accurate minutes of each meeting; and (5) the AMWG shall continue in operation until ~~terminated or renewed~~ termination or renewal under the Federal Advisory Committee Act.

^
by the Secretary

OPERATION

1. Meetings. The AMWG is expected to meet semiannually. The Secretary's designee may call additional meetings as deemed appropriate. A minimum of one meeting will be held annually. All meetings shall be announced by notice in the Federal Register and by news release to local newspapers.

Fifteen members must be present at any meeting of the AMWG to constitute a quorum.

Robert's Rules of Order will be generally followed, except that some flexibility will be allowed as needs dictate.

The Bureau of Reclamation is responsible for arranging meetings and for other duties associated with operation of the AMWG. They will arrange for meeting location, provide staff for the Designee, minutes, Federal Register Notices and all other operational requirements of the AMWG.

Meetings of the AMWG shall be held in the following locations: Flagstaff, Las Vegas, Phoenix, and Salt Lake. Meetings shall be rotated between these four sites as decided upon by the workgroup.

7. Minutes. Detailed minutes of each meeting will be kept. The minutes will contain a record of persons present and a description of pertinent matters discussed, conclusions reached, and actions taken on motions. Minutes shall be limited to approximately 5 to 15 pages. The corrections and adoption of the minutes will be by vote of the AMWG at the following meeting. The Secretary's Designee shall approve all minutes. The Bureau of Reclamation is responsible for recording and disseminating minutes to AMWG members within 30 days of the subject meeting.

9. Public Involvement. No later than fifteen days prior to each meeting a notice will be published in the Federal Register. Meetings will be open to the public and advertised in local newspapers. Interested persons may appear in person, or file written statements to the AMWG. Public comments can be on any issue related to operation of the Glen Canyon Dam. A specific time for public comment will be identified in the agenda. Advance approval for oral participation may be prescribed, and speaking time may be limited. Minutes of AMWG meetings and copies of reports submitted to the AMWG will be maintained for public review at the Bureau of Reclamation's Upper Colorado Regional Office in Salt Lake City, Utah and at the Library of Congress in Washington, DC.

10. Payment for Travel. Members of the AMWG may receive compensation for travel expenses, including travel and per diem. Compensation for those expenses will be made under federal guidelines. Alternates representing the official committee member may also receive compensation for travel expenses.

11. Open/Closed Meetings. If an entity proposes discussion of a sensitive issue they feel requires a closed session they should so state in a proposal submitted to AMWG members in sufficient time to include it in the agenda published in the Federal Register Notice announcing the next meeting. An executive session could be held during a regular meeting, but should be used rarely. Any sensitive cultural issues will require consultation with Native Americans prior to meeting.

Telephone conference meetings must have a notice in the Federal Register 15 days prior to the call. There must be adequate opportunity for the general public to listen to the conference call.

The AMWG may conduct business outside of formal meetings through telephone polls conducted by the Chairperson or his/her designee. In emergency situations, telephone polls can be requested by the AMWG member to act on clearly defined written motions for AMWG approval. Following approval by the Chairperson, a telephone poll will be conducted within 7 working days. During a telephone poll, all members will be contacted and requested to vote. Approval of a motion will be by at least a two-thirds majority of all members voting. The Chairperson is responsible for documenting in writing how each member voted and distributing the record to all AMWG members.

12. Reports and Record Keeping. The Annual Report (AR) required by the Grand Canyon Protection Act shall be written by the AMWG. The State of the Natural and Cultural Resources in the Colorado River Ecosystem report developed by the Grand Canyon Monitoring and Research Center will be attached to the AR and shall contain information on the condition of the resources impacted by the operation of Glen Canyon Dam. The AR shall be concise, containing critical resource issues and recommendations to the Secretary on future dam operations.

AMWG staff will supply GSA the required information to complete the summary report for Federal Advisory Committees.

13. Committee Expenses and Cost Accounting.

An accounting of the expenses for operation of the AMWG shall be maintained by Reclamation. Expenses and other information will be submitted to GSA as required by FACA. Committee expenses are limited to approximately \$154,000 annually.

SUB-GROUPS

1. Formation. -The AMWG may form sub-groups in order to facilitate the mission of the AMWG as identified in the Act and the AMWG Charter. Sub-groups will be formed for completion of specific tasks or for specified periods of time. Sub-group members will be named by the members of the AMWG. Upon formation of a sub-group, the Chairperson of the AMWG, with the advice of AMWG members, will approve nominated members to serve on the sub-group. Effort shall be made to keep sub-groups small. Sub-group will be formed or dissolved by a vote of the AMWG.

2. Requirements. -Sub-groups may choose their chairman from the AMWG named group members. The chairperson of any sub-group may convene group meetings at their discretion. Sub-groups may develop their own operating procedures. Sub-group meetings must follow requirements of FACA, except they need not be chartered. The Glen Canyon Technical Work Group membership shall consist of one representative named from each organization represented in the AMWG, with the exception of two members from the National Park Service representing the Grand Canyon National Park and the Glen Canyon Recreational Area, and one representative from the US Geological Survey. The sub-group will elect its own officers. Names of sub-group members will be announced to the AMWG at regular meetings and will be attached to the minutes. Sub-group members may designate alternates subject to approval of the Designee and the AMWG.

3. Charge. -Subgroups will receive their charge from the AMWG. Subgroups will work only on issues that were assigned them by the AMWG. They should not have the ability to follow other issues on their own. They are encouraged to submit issues to the AMWG they feel worthy of consideration and discussion. The AMWG would need to approve work on new issues. The AMWG may require the sub-groups to develop plans and direct them to come to a consensus or majority opinion at their discretion. Sub-groups shall determine their own operating procedures.

4. Reporting. -Committees will report at least annually to the AMWG at the request of the Chairperson. Sub-groups shall report only to the AMWG. They shall provide information as necessary for preparing annual resource reports and other reports as required for the AMWG.

5. Ad Hoc Groups. Ad hoc groups shall consist of members of the sub-group only. These groups may meet to discuss assignments from the sub-group. Ad hoc meetings will not require federal register notices. Minutes are recommended but, not required. Ad hoc groups shall report only to the main body of the sub-group. On a case by case basis the AMWG will provide direction to the subgroups on the flexibility they have in forming Ad hoc groups.

Approved: _____

Chairperson

Date

H:\GCES\AMWG\AMWG.OPP

GLEN CANYON DAM TECHNICAL WORK GROUP OPERATING PROCEDURES

FOREWORD

The Grand Canyon Protection Act (Act) of October 30, 1992, (Public Law 102-575) directs the Secretary of the Interior (Secretary) to "establish and implement long-term monitoring programs and activities that will ensure that Glen Canyon Dam is operated in a manner consistent with that of section 1802" of the Act. "The monitoring programs and activities shall be established and implemented in consultation with the Secretary of Energy; the Governors of the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming; Indian tribes; and the general public, including representatives of academic and scientific communities, environmental organizations, the recreation industry, and contractors for the purchase of Federal power produced at Glen Canyon Dam." In order to comply with the consultation requirements of the Act, the Glen Canyon Dam EIS recommended formation of a Federal Advisory Committee and a Technical Work Group. To fulfill this requirement, the Glen Canyon Adaptive Management Work Group (AMWG) was established. The AMWG held their first meeting on September 10-11, 1997, in Phoenix, Arizona and officially formed the Glen Canyon Technical Work Group (TWG) as a subgroup. The TWG is comprised of technical representatives representing the various stakeholders on the AMWG. The TWG shall perform those tasks charged to them by the AMWG. Additional responsibilities of the TWG are to develop criteria and standards for monitoring and research programs and provide periodic reviews and updates, develop resource management questions for the design of monitoring and research by or under the direction of the Grand Canyon Monitoring and Research Center (GCMRC), and provide information as necessary for preparing annual resource reports and other reports as required for the AMWG. The TWG shall comply with all regulations of the Sunshine Act and the Federal Advisory Committee Act pertaining to sub-committees. (See 41 CFR 101-6.10 Federal Advisory Committee Management) Staff resources for the TWG shall be provided by the Grand Canyon Monitoring and Research Center and Reclamation.

OPERATION

1. Meetings. - TWG meetings will be held quarterly or more frequently as required. Where possible meetings will be scheduled for 2-3 months in advance. Information will be provided to all interested parties. The Bureau of Reclamation (Reclamation) will be responsible for submitting meeting notices to be published in the Federal Register 15 days prior to meetings. Federal register notices may provide information on up to 3 meetings at a time. The Chairperson will draft a reminder meeting notice to the TWG members and the staff will distribute it at least 10 days prior to the meeting. Meeting format will be in accordance with these operating Procedures. Sixteen members must be present at any meeting of the AMWG to constitute a quorum.
2. Officers. - The TWG will elect it's own Officers. The Chairperson will be elected for a 1-year term. The Chairperson will be selected by a vote of the TWG. A Vice-chair will be selected to assist the Chairperson and will be an employee of Reclamation to ensure requirements of federal regulations are met and to provide assistance. Reclamation and GCMRC will provide staff and meeting resources. Reclamation shall be responsible for, and shall assure compliance with, the applicable federal regulations

Requests received after the agenda is finalized may be considered under new business (time permitting), or may have to be postponed until a future meeting. An agenda will be prepared and approved by the Chairperson and forwarded to the TWG secretary. The secretary will distribute the final agenda (by e-mail and/or by other means) to the TWG members and others on the distribution list. Reclamation is responsible for compliance with federal regulations. Reclamation will include in the Federal Register Notice: meeting dates, times, location, and a list of meeting agenda items.

6. Guidelines for Discussions. - The following ground rules will guide all discussions while the meeting is in session: Members will endeavor to arrive, return from breaks, and depart the meeting on schedule. Any person needing to continue private discussions after the meeting has been called to order will take their business outside the conference room. Members, alternates and visitors wishing to address the TWG will wait to be recognized by the Chairperson or designated discussion leader before speaking. Speakers will make their points succinctly and yield the floor to the next speaker, waiting to again be recognized for rebuttals. Comments are to be applicable to the motion and not repetitive to presentations, group discussion or other comments previously presented. Discussions of new or unrelated business will be postponed until the appointed time on the agenda.

7. Voting. - The maker of a motion must clearly and concisely state and explain their motion. Motions may be made verbal or submitted in writing in advance of the meeting. Motions may be proposed by a member in meetings where they are related to an agenda topic. After a motion and a second to the motion there shall be presentations by staff, where they are necessary or desired. Presentations shall be followed by discussion and a call for questions. The public will be given opportunity to comment during the question period as provided for in these operating procedures. Any member of the public who has asked to address the TWG, shall be provide a reasonable time to comment. The Chairperson may limit the total time allowed to the public for comments. Comments shall be applicable to the motion and not be repetitive of prior presentations, group discussions or other comments. The motion shall be fully documented for the minutes and restated clearly by the Chairperson before seeking a determination of consensus or a vote is taken.

Consensus is the desired result. All reasonable efforts will be made to bring the group to a consensus decision or recommendation. If consensus cannot be achieved, a vote will be taken on motions and recommendations to be forwarded to the AMWG. Only members of the TWG or their alternate may vote. A majority recommendation will go forward along with a minority opinion report (containing the alternate recommendation and identification of who constitutes the minority). Ad hoc groups consisting of the dissenting members may be formed as needed to prepare minority opinions. Each appointed TWG representative is expected to explain and/or clarify issues to their respective AMWG member.

Recommendations to the TWG or AMWG will be summarized in report form, will contain relevant background material on the issues, and will include a brief summary of previous discussions related to the issue (e.g. ad hoc group or TWG discussions). Requests for actions associated with a briefing document will be posed as a specific written recommendations that can be approved as written, approved with modification, or not approved. Reports and recommendations forwarded to the AMWG will be

identified as having been approved through consensus of the entire TWG, except when a minority opinion is submitted to the Chairperson in writing prior to the agreed date for forwarding TWG recommendations to the AMWG (generally 60 days before the next AMWG meeting). Members subscribing to the minority opinion will be listed in the minority report, which shall follow the same format outlined above for the consensus or majority report. The TWG Chairperson may invite a representative of the minority group to present the minority opinion to the AMWG.

8. Ad Hoc Groups and meetings. - Ad hoc groups may be formed by the TWG as needed with membership consisting of TWG members and alternates only. Groups may invite technical advisors to assist on some issues. These groups may meet to discuss assignments from the TWG. Ad hoc meetings will not require federal register notices. Minutes are recommended but, not required. Ad hoc groups shall report of their deliberations and findings to the TWG. Presentations of findings from Ad Hoc groups maybe given by individual members of the group. Ad hoc groups shall report only to the main body of the TWG. The AMWG may provide direction to the TWG on the flexibility they have in forming ad hoc groups. Ad hoc groups shall be formed by the consensus or vote of the TWG and shall terminate as soon as the assigned task is complete.

9. Minutes, Reports, and Record Keeping. - Minutes will be recorded by TWG staff support from GCMRC or Reclamation. Minutes will address the key topics of the TWG Meetings including proposals, motions, voting/approval of motions, majority/minority opinions, public comments, presentations, findings from Ad hoc groups, and other pertinent information. Minutes will not be a complete transcript of the discussions. An audio tape recording of the meeting will be kept for each meeting. The corrections and adoption of the minutes will be reached by consensus of the TWG at the following meeting.

Minutes, attachments, agendas and materials needed for upcoming TWG meetings will be distributed according to the schedule below:

A. Submittal of materials for upcoming TWG Meetings.

<u>15 Business Days Prior to TWG Meeting:</u>	<u>Responsible Person</u>	<u>Submit To</u>
• Agenda Items	TWG Members	Chairperson
• Materials for duplication and distribution	TWG Members	Staff

TWG members responsible for materials for an upcoming meeting shall forward them to the designated staff member in time to be included with the distribution which will occur 10 days prior to the meeting. Materials may be provided via e-mail or hard copy. Where copies of material are not provided to the designated staff member in time for normal distribution, the person or organization will be responsible for making their own copies and bringing them to the meeting. They may either: (1) e-mail, fax or other means; (2) duplicate prior to and distribute at the meeting. Staff, members, and public providing materials for distribution at the meeting should bring at least 40 copies. Meeting documents distributed at the meeting are to be provide first to the secretary,

TWG members, and GCMRC Chief. Copies of all handouts will be placed in a designated location for official visitors and the public. If action is anticipated to be taken on or as a result of that material, it is the TWG's expectation that all reasonable effort will be made to provide those materials to the members in advance of the meeting. In the event materials are not provided in advance of the meeting, action on this topic may be delayed at the Chairperson's discretion. Individuals making presentations at TWG meetings are shall notify TWG staff of any special audiovisual equipment or supply needs at least two weeks before the meeting.

A mailing list containing member's mailing address, phone number, and FAX number and E-mail address, as appropriate, will be maintained and distributed as needed. Updates will be prepared and the list re-distributed as appropriate. A copy of the roster of TWG members or alternates attending any meeting of the TWG shall be attached to the minutes, and shall include a list of all others in attendance.

B. Meeting material distribution to TWG Members

10 Calendar Days Prior to TWG Meeting:

Responsible:

- | | |
|---|-------|
| • Minutes and attachments from the previous meeting | Staff |
| • Agenda for the upcoming meeting | Staff |
| • Materials needed for the upcoming meeting | Staff |

E-mail, regular mail or other means shall be used for the distribution.

Reclamation will be responsible for reports and distribution of materials to AMWG, and providing copies of information to the Library of Congress. The TWG shall assist GCMRC in preparation of the draft Annual Report to Congress pursuant to the Grand Canyon Protection Act.

Minutes, documentation from meetings, and reports shall be made available to the public at the Library of Congress in Washington DC and the Upper Colorado Regional Office of the Bureau of Reclamation in Salt Lake City, Utah.

10. Arranging meetings and other duties associated with operation of the TWG. - Where possible meetings will be scheduled 2-3 months in advance. All meetings shall also have a Federal Register Notice published 15 days or more in advance of any meeting. Meetings locations will be determined by the group in a preceding meeting. The staff will arrange meeting rooms and audio-visual equipment, and block a number of hotel guest rooms. Meeting rooms will be arranged so that each of the 26 TWG members can all be seated around the table. Alternates representing an absent TWG member should take their place at the table. Additional seating will be provided around the margin or rear of the room for alternates who are attending with the member, for official visitors and for the general public.

11. Public, Visitors, and Open and Closed Meetings. - All meetings are open to the public. It is not anticipated the group will require closed sessions unless a provision is made to do so. Only members

of the TWG or their alternate may participate in discussions of the group. Appropriate staff of Reclamation and GCMRC shall provide pertinent information relevant to discussions when appropriate. A member or alternate may request a representative from their organization to respond to questions or make presentations when approved by the group. The public will be allowed to comment after discussion of each agenda item requiring a decision of the group and at the end of the TWG meeting or as provided in the agenda. Each person will be given up to ten minutes to address the TWG members at the time specified on the agenda for public comment. Greater consideration will be given to individuals submitting discussion issues and/or requesting time in advance of the meeting to the Chairperson. The Chairperson will control adherence to the time limit so the meeting is not unduly prolonged. Each speaker will be expected to provide their name and affiliation for the meeting minutes. The Chairperson will accept written comments from the public, and will allow their distribution if copies are available for all members (40 copies required). Written comments will be attached to the meeting minutes, if they are identified with the name, address, and affiliation of the provider .

Adopted by vote of the TWG on _____ in Phoenix, Arizona.

Approved: _____
Chairperson Date

To: AMWG Members

From: Bruce Moore, Bureau of Reclamation

Subject: Program Formulation Process

At the AMWG meeting on September 10 and 11, Reclamation was requested to provide the members a description of the program formulation process they go through to get funding approved for the Glen Canyon environmental work. Attached is a chart showing the chronology of the process for FY 1999 and FY 2000. As discussed at the meeting, the FY 1999 budget is in the final stages of completion. We have some time to make impacts to the internal portions of the budget but the total funds available are set. The Technical Work Group (TWG) and the Grand Canyon Monitoring and Research Center (CENTER) are working hard on the internal portions to come to final program costs.

For FY 2000, Reclamation is in the process of preparing the budgets. The attached calender shows the Preliminary FY 2000 BOR Work Program due to the Colorado River Energy Distributors (CREDA) by mid April and the Commissioner's final budget to the Assistant Secretary for Water and Science by mid May. This means the TWG and AMWG need to have the total amount somewhat firm to allow Reclamation to move the budget process forward. The details of the FY 2000 budget can be worked on until sometime in the winter of 1998.

Reclamation will be prepared to answer any questions at the meetings in January.

BUREAU OF RECLAMATION (BOR)

FY 1999 & FY 2000 PROGRAM FORMULATION CALENDAR

1997

September	FY 1999 Budget to OMB
Early October	Commissioner's FY 2000 Program Formulation Guidance to Regions.
October 20	Final FY 1999 Revenue Work Program due to CREDA.
Late November	FY 1999 OMB Passback
Late November - Early December	OMB Appeal period on FY 1999
Early-December	DOI transmits Secretary's FY 1999 appeals to OMB

1998

Late January - Early February	Colorado River Storage Project (CRSP) Revenue Budget Meeting for FY 2000.
Late January - Early February	President submits FY 1999 Budget to Congress
February 3	FY 1999 Budget Justification to Congress
February/ March	Answer questions, if any, posed by CREDA associated with the Final FY 1999 Revenue Work Program.
February/March	FY 1999 House Appropriation Hearing
March/April	Potential FY 1999 Senate Hearing
March/April	FY 2000 BOR Budget Review Committee (BRC) Process
April 15	Preliminary FY 2000 Revenue Work Program due to CREDA.
May/June	FY 1999 House Action on Energy and Water Development Appropriation.

Mid May	Final decisions on FY 2000 Budget made by Commissioner.
Late May	FY 2000 Draft Budget Proposal submitted to AS-WS
June/July	Departmental Review of FY 2000 Budget Proposal.
June/July	Answer questions, if any, posed by CREDA associated with the Preliminary FY 2000 Revenue Work Program.
June/July	FY 1999 Senate Action on Energy and Water Development Appropriation.
July/August	FY 1999 House/Senate Markups of Energy and Water Development Appropriations.
Early September	FY 2000 Budget Estimates to OMB.
September 30	FY 1999 Appropriations finalized.

ACRONYMS

BOR - Bureau of Reclamation
OMB - Office Management & Budget
CREDA - Colorado River Energy Distributors Association
AS-WS - Assistant Secretary Water and Science
BRC - Budget Review Committee

WORK PROPOSED FOR FY 1998:

Water and Energy Management and Development - Continue 5-year review of the Coordinated Long-Range Operating Criteria of the Colorado River, and the determination of reservoir releases to allow the delivery of water. Energy retrofit activities include the installation of energy efficient lighting, heating, and facilities. Provide engineering and miscellaneous support. \$1,382,000

Begin compliance with P.L. 104-127 authorizing cost sharing in lieu of repayment for the Salinity Program which is 4.5 percent of the total Colorado River Basin Salinity Program. \$849,000

Land Management and Development - Continuation of land resources management activities and general liaison activities with land managing entities, Native Americans, other cooperating agencies, the public, and special interest groups. \$495,000

Fish and Wildlife Management and Development - Continue work on three environmental impact statements for three Initial Units: Flaming Gorge, Wayne N. Aspinall, and Navajo. \$1,861,000

Support is also provided for the endangered fish studies which are part of the RIP for the Colorado River. \$2,295,000

Grand Canyon Monitoring and Research Center (GCMRC) - The Senate Committee Report 104-320 accompanying the FY 1997 Energy and Water Development bill required that costs associated with monitoring and research activities and the role of Glen Canyon Environmental Studies (GCES) in the future monitoring and research be submitted in Reclamation's budget justification documents. A very important part of the Adaptive Management Program outlined in the Environmental Impact Statement on the Operations of Glen Canyon Dam filed with EPA March 1995 is the establishment of a monitoring and research center. The GCMRC, which replaced the GCES, will formulate and implement long-term monitoring and research programs approved by the Secretary. The following is the estimated work program for 1998:

	<u>Estimated Cost</u>	
GCMRC	\$ 1,128,000	(Including approx. 15 to 20 % overhead)
Independent Review Panel	84,000	
UC Region Support	256,000	(Including approx. 52 % overhead)
Denver Office Support	296,000	(Including approx. 48 % overhead)
Adaptive Mgmt Work Grp	312,000	
Technical Work Group	98,000	
Data Base Mgmt 1/	945,000	
Biological 2/	1,600,000	
Physical 3/	1,245,000	
Cultural 4/	<u>929,000</u>	
Total		\$ 6,893,000

The following is the detailed work plan for FY 98 for the GCMRC:

INFORMATION MANAGEMENT AND TECHNOLOGY 1/

- *Integration report on riparian and aquatic biology
- *Completion of GIS maps
- *Bathymetry data collection for management needs

BIOLOGICAL 2/

AQUATIC SYSTEM MONITORING AND RESEARCH

- *Native and non-native fish monitoring
- *Drift studies to monitor food base assessment
- *Monitoring assessment of trout populations
- *Monitoring of algae and freshwater shrimp populations
- *Kanab Ambersnail monitoring
- *Development of T&E species information
- *Defining dam-induced changes in food base and changes due to ecological procession
- *Benthic and draft analysis for food base assessments

RIPARIAN RESOURCE MONITORING AND RESEARCH

- *Avifauna monitoring including endangered species
- *Riparian monitoring use sampling plan
- *Monitoring of the southwestern willow flycatcher
- *Kanab ambersnail monitoring

PHYSICAL SYSTEM MONITORING AND RESEARCH 3/

- *Conduct aerial photography of the Grand Canyon
- *Quantify the number of beaches, backwaters, and marsh habitat
- *Insert the stereo imagery and map image processing into a geographic information system
- *Monitor the distribution and volume of sediment in the Grand Canyon
- *Monitor the changes in beaches
- *Assessing the critical habitat areas resulting from the beach building flow
- *Evaluate changes in marshes and backwaters from the beach building flow
- *Evaluate water chemistry

CULTURAL MONITORING AND RESEARCH 4/

- *Continue cultural resource monitoring
- *Monitor all cultural resource areas identified in the Historic Preservation Plan of 1997
- *Continue monitoring prescribed in the Programmatic Agreement
- *Develop information technologies plan for tribal nation lands
- *Develop multi-resource mapping procedure for cultural resources on tribal lands

LAKE POWELL MONITORING AND RESEARCH

No funds are currently programmed for monitoring or research in Lake Powell in FY 98. An assessment of future monitoring and research efforts in Lake Powell will be completed by August 1, 1997.